APRIL 1951

FIREMEN

FIFTY-FIFTH YEAR · NATIONAL FIRE PROTECTION ASSOCIATION

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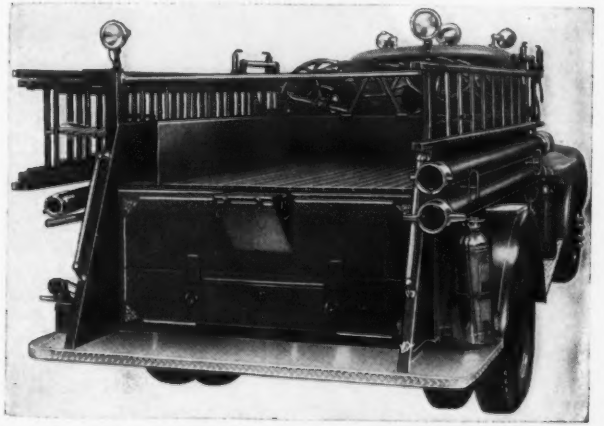

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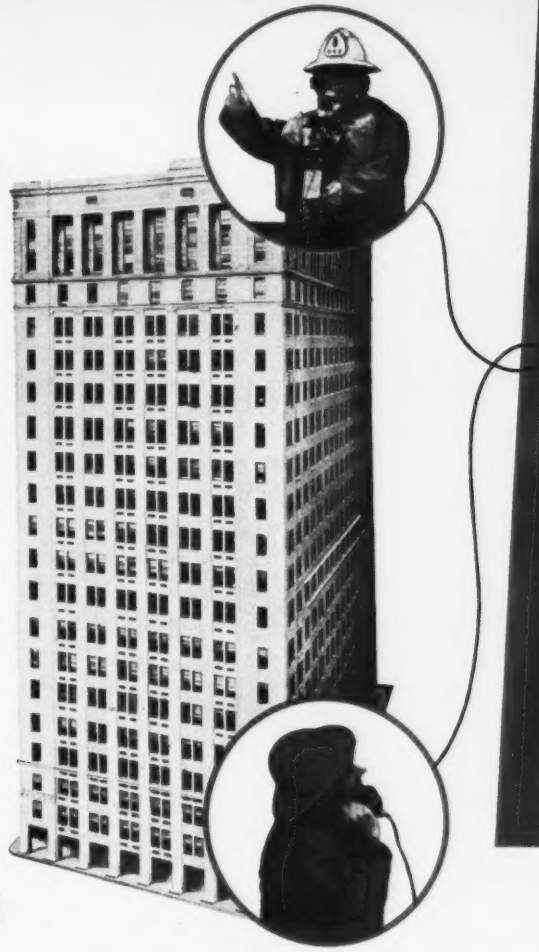

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The safest and most efficient techniques for handling fire hose and fire department ladders were recently recorded in pictorial sequences under the direction of the Joint Committee on Evolutions representing three leading fire service organizations: The Committee on Firemen's Training of the National Fire Protection Association, the International Association of Fire Chiefs, and the Fire Department Instructors Conference.

The new Civil Defense Edition contains 335 photographs averaging 4¾ x 3¼ in. size. Each evolution is shown in step-by-step sequence. A caption explains each step of the evolution, emphasizing cautions to be observed. The Civil Defense Edition, also useful in regular basic drill and training, contains all evolutions included in the two large pictorial training manuals which together retail for $2.50, except pompier or scaling ladder evolutions which are not considered pertinent to civil defense training.

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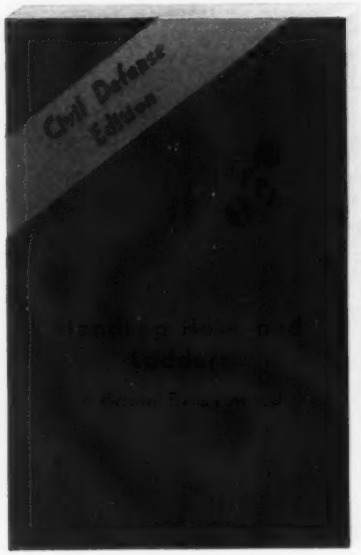
Below is a reproduction of a typical photograph in actual size in which it appears in "Handling Hose and Ladders." Captions are in large easy-to-read type.



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Volume 18 Number 4

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PAUL R. LYONS, ASSOCIATE EDITOR
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Records Lost at Lansing

The cover photo (*Acme*) shows the $5,000,000 fire in the State Office Building at Lansing, Michigan, which (as has been well publicized) was set by a young state employee desiring to escape military service. The building was built of fire resistive materials, seven stories high. (The NFPA QUARTERLY will publish a detailed report when investigations now going on are complete.)

Night view of flames issuing from the seventh floor on the street side of the Michigan State Office Building

Acme

International

This picture shows how flames "boiled out" of the small windows of the mezzanine floor used as a storage area. Flames also appear at top floor windows.

The fire was started at noontime in a mezzanine floor above the sixth floor. This was a huge undivided area of 32,000 sq. ft. used for storage of state records, correspondence and highway plans. These irreplaceable records were stored in paper cartons on open shelving and in combustible cabinets directly contrary to good practice as recommended in the published NFPA Standard for the Protection of Records (64 pp., $1 per copy). The mezzanine story had no windows facing the street as the building had an ornamental coping on that side. This made it impossible for firemen to reach the mezzanine fire area from the street side. There were small windows facing the courtyard.

When Chief Hugh Fisher's men first arrived it was impossible to stay on the floor where the fire was burning because of the intense confined heat which could not be ventilated. The Lansing department has three aerial ladders, one 100 ft. and two 65 ft. Additional aerials were summoned from Flint, Grand Rapids, and Battle Creek, requiring runs of 46 to 62 miles in bitter winter weather, so that the fire could be attacked with additional ladder pipes. As shown in the cover photo, three huge contractors' cranes were set up as improvised water towers. All of Lansing's 149 fire fighters, normally working on an average 63-hour week, were called to the battle that continued all night and through the next day. In addition to 3 aerials, there are 7 engine companies plus 2 squad companies equipped with high pressure fog trucks.

The fire so severely damaged the mezzanine and seventh story that their removal will be necessary. Water pouring down through the building caused plaster on lower stories to fall and contents were thoroughly soaked. This damage could have been averted had recommendations made 5 years before by State Fire Marshal Arnold C. Renner been carried out. The recommendations called for masonry separation of the mezzanine into several storage areas, stairway enclosures, and sprinkler protection for the mezzanine.

This fire again emphasizes that some of the worst fires occur in buildings built of fire-resistive materials where sufficient consideration is not given to other important features of good fire protection practice such as sub-division of fire areas, protection of vertical openings, and automatic sprinkler protection.

Come to the 55th NFPA Annual Meeting

Detroit, Michigan, May 7-11, 1951

DETROIT, MICHIGAN, will be the site of the 55th NFPA Annual Meeting on May 7–11, 1951. All NFPA members and others interested in fire protection are welcome and urged to attend the sessions which will be held in the Hotel Statler.

This 5-day program promises to be one of the most interesting Annual Meetings in years. A local committee of distinguished NFPA members in the Detroit area, including representatives of the Detroit Fire Department, have planned a number of features of special interest for visiting NFPA members including tours of leading automobile manufacturing plants and other points of interest. There will also be special programs for the ladies.

Detroit has one of the largest and best fire departments in the United States, and its Fire Prevention Bureau is world-famous (see NFPA FIREMEN issues for July, August, and September, 1949).

Program features of special interest include a CIVIL FIRE DEFENSE FORUM with top civil defense and fire department authorities participating, an INDUSTRIAL FIRE PROTECTION SESSION, and a session on MUNICIPAL AND RURAL FIRE PROTECTION. Chief John H. Alderson of Los Angeles, President, International Association of Fire Chiefs, and a Director of NFPA, will speak. Chief Alderson is justly noted as one of the most stimulating speakers in the fire service.

The 1951 Volume of Advance Reports contains preprinted committee reports submitted for adoption at this meeting. This Volume includes new Specifications for Motor Fire Apparatus and Standards for "Volunteer Fire Departments." Member fire departments may receive this volume free of charge by returning the order form sent to members with the March FIRE NEWS.

The FIRST GENERAL SESSION held on Monday evening will feature an address by Governor Luther W. Youngdahl of Minnesota, one of the most inspiring public speakers in America today. The session will also include addresses by NFPA President A. H. S. Stead of Montreal, a report by the Chairman of the Board of Directors, Mr. Richard E. Vernor of Chicago, and by Treasurer Hovey T. Freeman of Providence, and by General Manager Percy Bugbee.

The First General Session is preceded on Monday morning by simultaneous meetings of the FIRE MARSHAL'S SECTION and the RAILROAD SECTION and on Monday afternoon by the ELECTRICAL SECTION meeting.

Tuesday will feature a morning and afternoon INDUSTRIAL FIRE PROBLEMS SESSION. There will be committee reports on a revised watchman's standard and on lumber storage.

In the afternoon an interesting EDUCATION AND PUBLICITY SESSION has been arranged with speakers on public relations work by fire departments, fire prevention education, and related subjects. There will also be reports of committees on Fire Prevention and Clean-up Campaigns, Public Relations, Membership, and Publications.

On Tuesday evening the first annual meeting of the newly created SOCIETY OF FIRE PROTECTION ENGINEERS will take place.

A session on FLAMMABLE LIQUIDS, GASES, AND HAZARDOUS CHEMICALS will present discussion of the Flammable Liquids Ordinance, a revision of Magnesium Standards, and several others.

There will also be a FIRE SAFETY OF STRUCTURES SESSION with discussions of building construction, a Safety to Life Committee report, and other related topics.

A TRANSPORTATION SESSION on Thursday morning will present committee reports on Suggested Airport Rescue and Fire Fighting Equipment, revised Standard Operating Procedures for Aircraft Rescue and Fire Fighting. There will also be Marine Committee reports and the report of the Committee on Transit Operations.

At the same time there will be a MUNICIPAL AND RURAL FIRE PROBLEMS SESSION including addresses on Municipal and Rural Fire Service Developments, Firemen's Training, revised Specifications for Motor Fire Apparatus, revisions on the standard for Volunteer Fire Departments, and a new standard on Dehydrators and Driers.

The report of the Committee on Civil Fire Defense, a panel discussion and addresses on this subject will be held on Thursday afternoon.

A FIRE EXTINGUISHMENT SESSION on Friday morning will have the report of the Committees on Special Extinguishing Methods including special reports on Foam and Wetting Agents. New standards on Automatic Sprinklers are also being presented.

An Invitation

The location of the 1951 NFPA Annual Meeting at Detroit gives thousands of fire departments and fire fighters an opportunity to sit in at any or all of the sessions. Traditionally, volunteer or paid firemen in uniform do not pay registration fees at the NFPA Annual Meeting. See that your department has several representatives present so that someone will be representing you at each of the simultaneous sessions. Here is an outstanding opportunity to sit in, as fire protection standards are discussed and developed.

MAKING A GOOD JOB OF IT

BY WARREN Y. KIMBALL

In-Line Pumper Operation

EACH year more fire departments are supplying hose streams with their pumpers placed close to the fire and supplied by lines from the nearest hydrant. This permits the department to go to work with lines fed from the tank on the apparatus while the hydrant connections are being made.

There are a number of other reasons why in-line pumper operation is becoming more popular each year. The water systems of many communities do not always provide sufficient pressure for good direct hydrant streams. If the pumper must be placed at the hydrant to boost the pressure, it is seldom near enough to the fire to permit use of booster lines and 1½-in. lines supplied by the water tank to say nothing of axes, masks, ladders, plaster hooks and other vital fire fighting tools carried on the pumper.

The time element is also important, especially where there are only three or four men arriving on the first pumper truck with many things to be done. Any fire company can convince itself of the possible saving in time in getting pumper streams in service if it will practice a little with this evolution.

Most fires can be controlled with two 1½-in. lines using combination fog-straight stream nozzles. However, for best results such nozzles should have about 80 to 100 lbs. nozzle pressure. In most cases this means that pumper pressure is required for good streams.

One 2½-in. supply line from a hydrant flowing at 40 lbs. or better can give 200 gpm to a pumper 400 ft. away on approximately level ground. This will supply two 100 gpm streams from fog nozzles on 1½-in. lines. This is approximately the same flow as two streams through ¾-in. straight stream tips at conventional 45 lbs. pressure.

In a different arrangement, a 2½-in. line from the hydrant can supply a 1-in. tip (200 gpm), also with the pumper 400 ft. from the hydrant. With 200 gpm flow, the pumper can be an extra 100 ft. from the hydrant for each 10 lb. increase in hydrant residual pressure. However, as a matter of good practice it is wise to allow a few pounds leeway in making calculations so that a sudden drop in pressure in the main will not seriously affect the layout.

One line of 2½-in. hose can be used to move as much as 250 to 300 gallons of water from the hydrant to the pump if the distance is short. With 250 gpm flowing the pressure will fall 15 lbs. for each 100 ft. of hose. With 300 gallons flowing the pressure loss will be 20 lbs. per 100 ft. Thus with this greater flow through 2½-in. hose, a hydrant flowing at 60 lbs. will only carry the desired quantity about 250 or 300 ft. The best practice is to assume that each 2½-in. line can safely provide 200 gpm to the pumper. If 400 gpm is wanted, two 2½-in. lines should be used to supply the pumper.

IT is not possible to obtain more water than the hydrant can supply. Some hydrants on small dead-end mains are very poorly supplied. Such hydrants should be marked to indicate their limitations. If a certain hydrant will flow only 100 gpm at 15 lbs., it will then be adequate to feed a pumper 500 ft. away through 2½-in. hose if the pumper output is limited to 100 gpm., or one good 1½-in. line. This is because with only 100 gpm flowing the friction loss in the 2½-in. line will be only 2½ lbs. per 100 ft. The pumper will then provide the pressure for one usable line. In such situations an acceptable practice would be to lay out two 1½-in. lines if needed to cover the fire, and to operate them intermittently to avoid exceeding the available hydrant supply.

If the pumper has a large tank, the 1½-in. lines might be supplied from the tank and the 2½-in. hydrant line used to keep the tank full. Care must be taken not to turn strong hydrant pressure into a tank that is not adequately vented or damage may result.

A GOOD pumper operator will have little difficulty in making the most of the water available to his pump from a hydrant supply line. Compound gage readings often are rather inaccurate, particularly at low pressures. The operator can observe the supply line where it enters the inlet of the pump. As long as that line is hard or firm the pump is getting enough water to meet the demands of the hose lines. When the line begins to get soft, the limit of the supply available from that line has been reached.

Most alert operators open the throttle and increase the discharge until the supply line begins to get soft indicating that they are obtaining all of the available supply.

Of course, with 150 or 200 ft. lines from the pump to the fire, it is seldom desirable to discharge at pressures of much over 150 lbs. unless the lines are working at a high elevation. Some departments limit pressure on these lines to 120 lbs.

If the operator finds that the supply line is collapsing before he reaches the desired pump pressure and knows that the hydrant has been opened fully, he will have to be satisfied with streams of somewhat lower nozzle pressure. If the supply is very poor he may have to be satisfied with one 1½-in. line until an additional supply can be obtained. It should be remembered that if the supply is inadequate for two 1½-in. lines with the pumper close to the fire, most probably it would also be inadequate if the pumper was at the hydrant because the actual difficulty is the inadequate hydrant supply.

If the operator drops the pumper discharge pressure slightly he can usually correct the situation. This is because a decrease in nozzle pressure will decrease the flow and result in a reduction in the friction loss in the supply line. For example, a hydrant that may not be able to give a desired 200 gpm at 40 lbs. may be able to give 180 gpm at 36 lbs. A decrease of 10 gpm in each of two leader lines will reduce friction loss in the supply line to the pumper by about 2 lbs. per 100 ft. A decrease of 5 gpm in each leader line will reduce the friction loss in the 2½-in. supply line by about 1 lb. per 100 ft.

Where in-line pumping is practiced, it is generally limited to first

(*Please turn to page 20*)

Some In-Line Pumper Evolutions Worth Trying

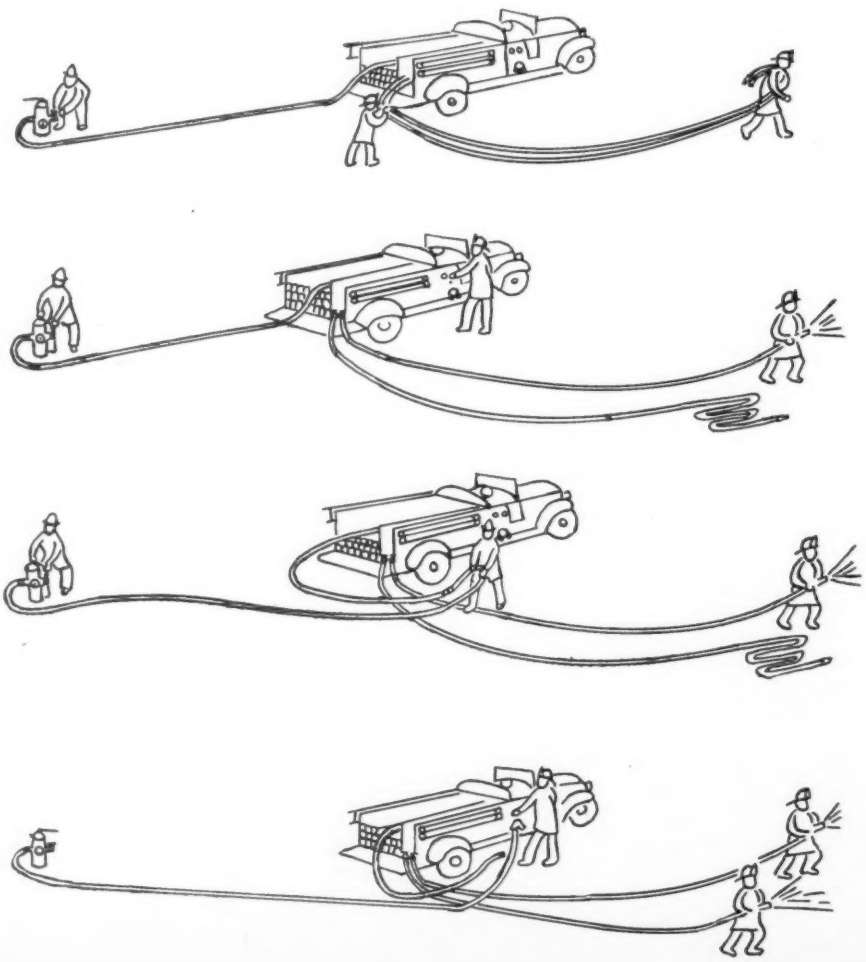
ON THE previous page some advantages of in-line pumper evolutions were discussed. On these two pages are shown some of these evolutions that are worth trying at a company drill session. There is no other way in which a small crew can get several continuous streams in service as quickly with pump pressure. The sketches on these pages pre-suppose a three-man crew arriving on the apparatus as a first response to a working fire that appears already too big for a booster line. If more men are available it should be obvious that they can be very useful in speeding up the operations providing that every man is trained in the evolutions employed. Incidentally, the evolutions shown on this page could be used in tournament or other firemanic competitions this summer, where such are a part of the training program.

It should be obvious also that the exact manner in which the 1½-in. leader lines are connected and carried will vary with different pumper rigs. If independent 1½-in. gates are not provided at the rear of the truck, some departments connect the two 1½-in. leader lines to a gated 2½ to 1½ x 1½-in. wye supplied by 50 ft. of 2½-in. hose connected to a pumper outlet gate (Carry the butt of the line over the side of the hose body near the pump operator's panel). Some other departments carry the 1½-in. leader lines in hose boxes extending across the top of the body for 2½-in. hose. The 1½-in. lines are arranged so that they can be pulled off on either side.

Likewise there are various possible arrangements for pumper inlet gates. Some departments have a gated siamese or a siamese with clapper valves that permits connection of two 2½-in. supply lines at the rear of the truck. If hose is carried with female coupling off first (for hydrant to fire lay) the pumper inlets will need female couplings and a gated 2½-in. wye can be employed at the 2½-in. pumper inlet.

Even before a second supply line is in service, the 2½-in. line from the pumper to the fire often can be used in place of one of the 1½-in. lines if the pump is not too far from a good hydrant supply. The operator can tell fairly well from the residual pressure on his compound gage how much more water is available at the pumper.

In-Line Pumping: Supplying 1½-in. Leader Lines

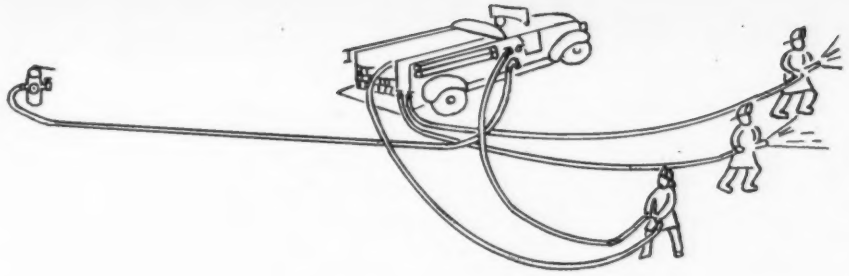


After laying 2½-in. supply line hydrant to fire, hydrant man connects line and gates spare 2½-in. hydrant outlet. (Sometimes gated wye is used on large hydrant outlet). Pipeman advances two preconnected 1½-in. leader lines, assisted by pump operator. (Pipeman can also take axe if needed).

Pipeman or hoseman drops one leader line outside. When nozzle is in position operator charges first line from booster tank. Where a hose clamp is used hydrant man can turn on water without waiting for 2½-in. line to be connected to pump inlet.

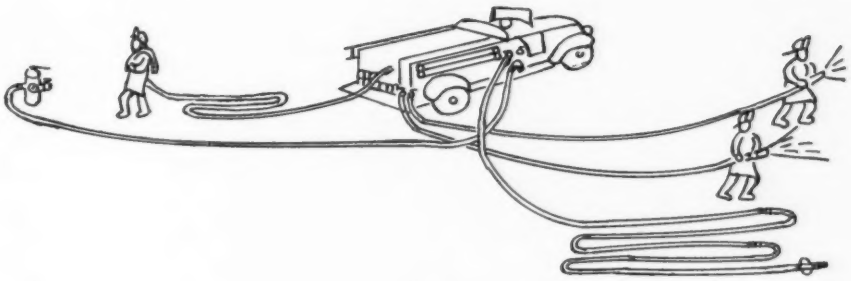
Operator pulls enough 2½-in. line from truck to reach pump inlet.

Operator connects supply line to pump inlet and closes tank valve as water from hydrant reaches pump. He then adjusts pressure and sets relief valve as needed. Hydrant man advances to man second line or assist with first line as desired.

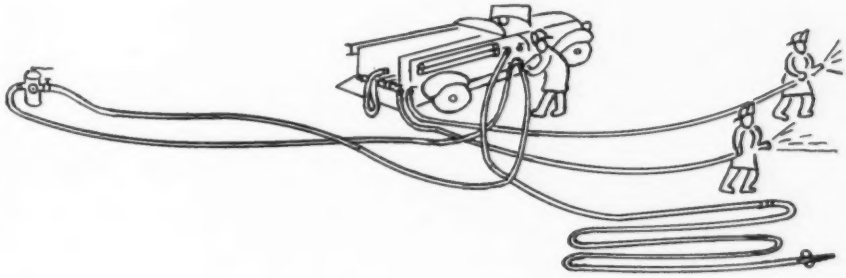


In-Line Pumping: Backing up the Leader Lines

After adjusting pump, operator connects female coupling from hose body to 2½-in. outlet. He then pulls off 150 to 200 ft. of 2½-in. hose as needed.

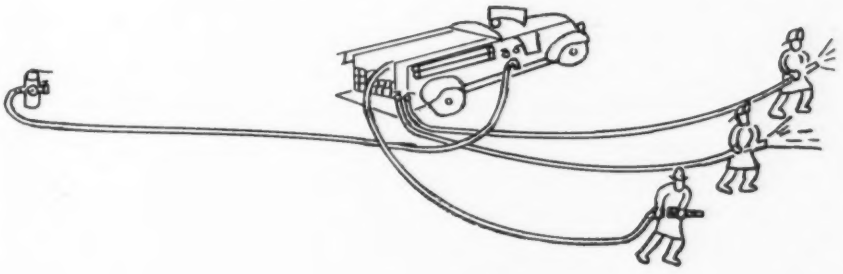


Nozzle is attached and hose is flaked in front of building ready for use. Operator then takes next female coupling and extends another 2½-in. supply line to hydrant (using standard one-man method shown in NFPA hose manuals).

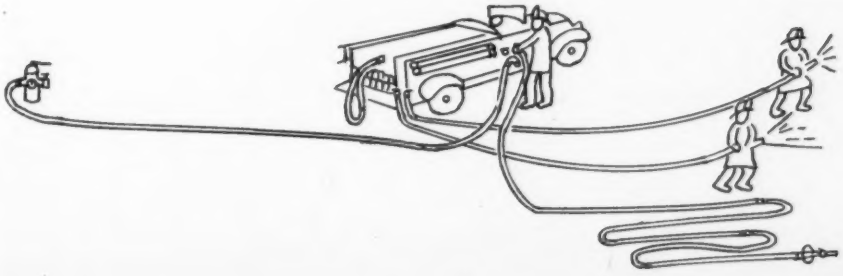


Second line is connected to hydrant gate and to pumper inlet (Usually a bystander is instructed to turn on hydrant gate fully at signal from operator). Operator now has adequate supply for three lines. The 2½-in. line to fire can be used by any available personnel including volunteer, call or off-duty firemen arriving after the apparatus.

In-Line Pumping: Alternate Method of Advancing Big Line Utilizing Reverse Couplings



After leader lines are in operation and pump is adjusted, operator attaches a nozzle provided with a double male coupling, to 2½-in. line from hose body and advances big line to building.



When sufficient line has been removed, the line is broken at the truck and the male coupling is attached to a pumper outlet previously equipped with a double female coupling to permit quick connection of reverse lays. Some fire departments specify third pumper discharge outlet on 500 gpm pumpers or attach a gated wye to an existing outlet so as to have a spare outlet for reverse connections.

FIRES IN THE NEWS

Houston, Texas. January 31. (*Acme*) Wet freezing weather hampered fire fighting when this fire destroyed six buildings in a business block. One fireman died of a heart attack during operations. Estimated loss was over $800,000.

North Liberty, Indiana. January 13. (*South Bend Tribune*) Two warnings to clean up this building as a fire prevention measure were ignored. Then a short circuit near a shellac dip tank in a poorly ventilated room caused a flash fire that passed fire doors. Intense heat, poor water supply, and a delayed alarm helped to make this a loss of about $300,000.

(Below) St. Paul, Minnesota. February 8. (*Acme*) A leakage of butane gas ignited in this mineral treating building exploding and causing the first and second floors to collapse. At least fourteen persons died. Many others were injured. While resultant fire damage was small, total explosion damage amounted to about $1,000,000.

Large, Pennsylvania. February 21. (*Pittsburgh Sun Photo from International*) Gasoline ignited during fueling of a bus in this terminal. The resultant fire destroyed 26 buses and was fought by more than 300 firemen from 12 volunteer fire companies, with loss approaching an estimated $500,000.

Galena Park, Houston, Texas. February 7. (*Acme*) This 24,500 gallon gaso ine tank ignited during a grass fire in the vinicity. More than 175 firemen used tons of foam powder and succeeded in preventing the fire from spreading to adjacent tanks. The fire lasted more than 24 hours before it was controlled.

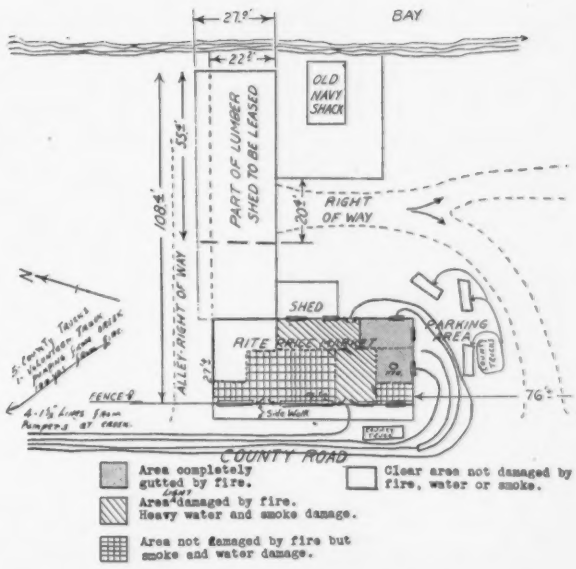
(Below) New York, New York. February 9. (*Acme*) This furniture warehouse was destroyed during a five-alarm fire in freezing weather. The fire originated in the rear of the building, spread through the first and second floors, and threatened adjacent buildings before being confined. Two fire fighters were injured during operations.

Charting the Fire Grounds

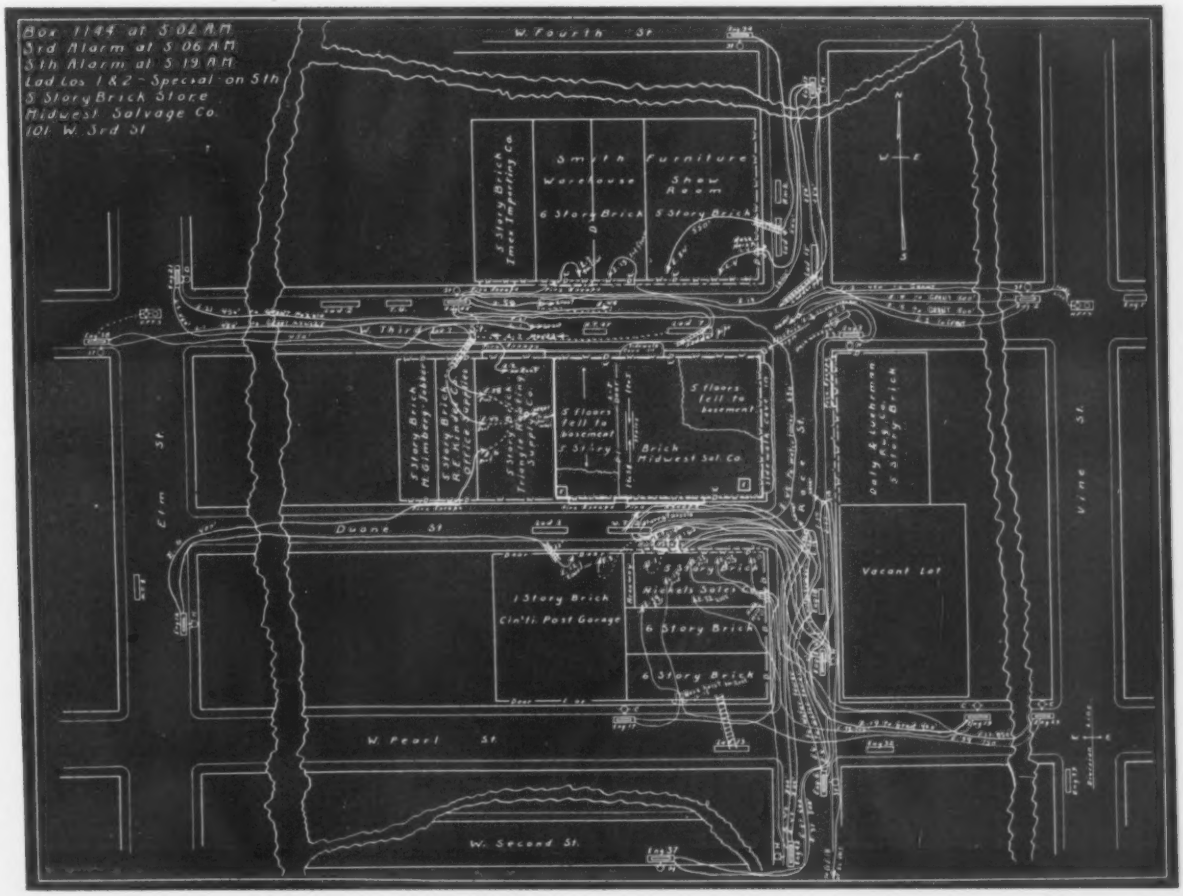
"POST-MORTEMS" on fires by the departments that fought them can be extremely valuable, not only as a means to establish accurate fire records, but also as a supplement to regular training procedures. Graphic representation of the fire grounds helps to simplify such analyses and help the individual fire fighter to understand what he did, where he did it, and how important his individual effort was to the development of fire ground strategy.

On this page, considerably reduced in size, are two drawings which were submitted recently. One of these is from a large city department and was a large blueprint. The other was by a smaller department and was prepared as a black and white sketch.

The exact manner of presentation and information to be shown will depend upon local conditions. However, details often noted in such reports are: type of structure involved, extent of fire (including exposures) water supply available, apparatus available and how it was placed, and, of course, date, time, weather, and estimated loss. Scale drawings offer a simple method of presenting this information.



Drawing at right was submitted as part of a report by the Inverness Volunteer Fire Department, Inverness, California. Blueprint was submitted by the Cincinnati Fire Department, Cincinnati, Ohio.



Dehydrators and Driers on Our Farms

by Glenn Rowell

Fire Underwriters' Inspection Bureau, Minneapolis. Chairman, NFPA Committee on Dehydrators and Driers

THE mechanization and electrification of our farms has made possible a tremendous change in the technique of farming in this country. Today the farmer is faced with the necessity of producing more and better crops per acre with fewer man hours devoted to each crop. The progressive farmer has already realized the necessity of supplying a superior product even though this often means a processing operation on his farm. This trend is rapidly changing each farm into a regular industrial establishment and bringing with it all the hazards to life and property common with the use of power and heat.

As one of the best examples of this trend, we need look no further than the use of electricity on the farm today. Some fifteen years ago when the agronomists and agricultural engineers were charged with the responsibility of setting up a program for the Rural Electrification Administration, it was determined by them that distribution lines should be radiated throughout our country areas capable of supplying up to 100 kilowatts of current per month per farm. Just fifteen years later we find in many of our better farming areas R.E.A. projects supplying over 300 kilowatts per month per farm and we are told they would supply even more if they had line capacity with which to do it. We are also informed that they anticipate supplying between 500 and 600 kilowatts per farm within the next five years.

The addition of processing operations on farm properties which consist largely of a group of frame buildings makes it most essential that every possible safeguard be utilized to prevent fire hazards. Many farm properties are either beyond protection of modern fire fighting apparatus or else the distance is so great that the time interval between the alarm and the arrival of the apparatus may prove disastrous. One of these partial processing operations which is becoming increasingly popular because it has actual money making potential is the crop drier or dehydrator. The reasons for its popularity are simple. The artificial removal of moisture produces crops of higher grade and greater feeding or money value. It saves rain damage, spoilage and field losses. It takes care of that excess moisture in combine grains and even permits the harvesting of crops in our northern tier of states which would normally not properly mature.

As you probably have heard, the average farmer likes to grow corn having large ears and even though agronomists advise against the practice, some 80 percent of the hybrid corn grown in this state (Minnesota) is grown from seed which really should be planted in Missouri or southern Iowa. The number of crops being artificially dried on the farm is ever increasing. Among them are the following: hay (dehydrated and mow finished), combine grains and sorghum, rice, corn, tobacco, fruits, walnuts, peanuts, hops, beans, onions, sweet potatoes, and even flower bulbs. Moisture is removed by air movement over and through the crop and when we heat that air, for each twenty-seven degree rise in temperature we double the amount of moisture a given volume of air will absorb.

Tests and pilot plants set up by many land grant colleges and universities all over the country have established drying procedures for all types of crops. It is most interesting to note that invariably the food value of any crop is enhanced when it is artificially dried by passing heated air through it. As an illustration we need look no further than the report of the U. S. Department of Agriculture, which states that the use of artificial heat to dry alfalfa provides a means of preserving more of the dry matter and nutriments than any other method. Dry matter preserved by dehydration was 60 percent greater than when field cured, 12 percent greater than when ensilaged, and 4½ percent greater than when the alfalfa was barn finished. The preservation of carotene by dehydration is about 300 percent greater than that preserved by barn finishing and carotene losses by other methods, such as field drying, are much greater. This has resulted in making the dehydration of alfalfa alone a multi-million dollar industry. Last year in the state of Kansas the gross sales in dehydrated alfalfa amounted to almost ten million dollars. We therefore have every reason to expect a tremendous increase in the use of dehydrators and driers.

UNFORTUNATELY most agencies engaged in disseminating information among farmers concerning the values of dehydrating equipment are not sufficiently familiar with the fire hazards involved to make use of existing standards and ideas concerning the safeguarding of these hazards. This has resulted in placing in the hands of farmers all over this country ideas which actually constitute severe fire hazards. As an illustration, there are now on the market alfalfa dehydrators which employ between 1500 and 2000 degrees of temperature at the furnace outlet and often that furnace outlet is immediately adjacent to the drying end of the device.

There are numerous publications and diagrams available to farmers today which recommend installations of manually operable furnaces within frame buildings without proper regard to such things as clearance, proper protection of combustible surfaces and venting. In fact, it is quite evident that effort, in most instances, has been expended toward devising a method of drying a crop without any regard to the hazards involved. This, of course, necessitates drastic action on the part of some agency. It is my belief that the National Fire Protection Association is the proper agency to formulate proper specifications or standards for the construction and use of dehydrating equipment.

Several years ago I had occasion to visit a small hydrid seed company located in Western Minnesota and found them using indirect heat generated by means of a coal-fired ordinary domestic type furnace lo-

cated within a frame building without proper clearance between the breeching and combustible building members or the furnace jacket itself. Furthermore, there were no automatic controls and no means of controlling the maximum temperature delivered by the furnace. The hazards occasioned through a continued use of this heating device were carefully explained to the owner and he agreed to make changes as soon as he finished drying the present batch of hybrid seed corn. However, before that operation was completed, the building was completely destroyed by fire. Many such instances have come to my attention.

I have also found that most crops have critical drying temperatures which should not be exceeded because to do so will lessen the food or money value of the crop. Because of this, we not only need to emphasize the need for standards on the fire hazards but can also sell interested farmers on the basis of assuring both safety to their properties and crops and the production of a superior product. It therefore becomes essential to incorporate the following requirements into a usable standard:

1. By consultation with leading agronomists set up a table of maximum temperatures which should not be exceeded for the drying of various crops for both seed and maximum food values.
2. Require only automatically controlled heating devices of the approved type be acceptable for such drier operation.
3. Prohibit the use of direct fired devices within any building in which a combustible dust cloud is likely to be formed.
4. Prohibit the use of direct fired driers within buildings of frame construction.
5. Recommend the use of indirect fired driers whenever possible.
6. Require screening of air intake on both direct and indirect fired driers with screen having a mesh not greater than ½ inch.
7. On all direct fired driers other than those utilizing gas as fuel, require a screen between the fire pot and the drier chamber or the heated air duct entering a building which will prevent the passage of flaming soot particles or fuel into the product being dried.
8. Make mandatory a requirement for portable driers that they be securely fastened in place should fuel be conveyed to them by means of a fixed or flexible tubing or pipe.
9. Make mandatory a requirement for access doors on all drying units of the tumbler, column or blanket type to permit cleaning, inspection and also as access for water streams in the event of fire.

FOLLOWING the completion of such a set of standards, an attempt must be made to put these standards in the hands of all agricultural divisions of colleges and universities throughout this country. It should also be forwarded to all farm periodical publishers, who, I believe, we will find most willing to cooperate by publishing the entire standard.

As an illustration of the necessity of acquainting the farm departments of our educational institutions with standards concerning safety to life and property, I wish to cite the example of an extension pamphlet on pig brooders, mailed out by one of our larger universities several years ago. This publication included a working drawing, description and a complete list of materials necessary for the construction on the farm by the farmer of a pig brooder utilizing infra-red lamps as the heat source.

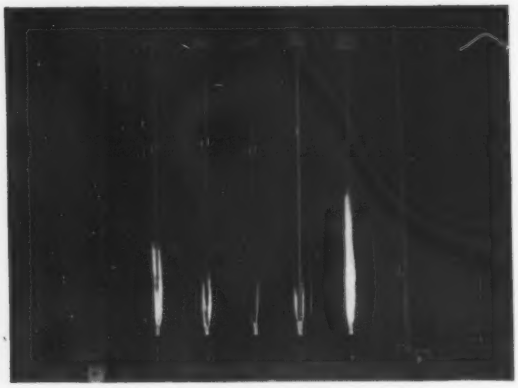
The information contained in this publication was most complete in regard to the amount of lumber necessary, and the size of the finished brooder. However, when it came to the wiring technique, the materials to be used and the type of lamp to be purchased, the publication was woefully weak. It did not mention anything about the focal length of infra-red lamps, the need for using special types of sockets for infra-red bulbs, nor the advisability of utilizing a Type S flexible cord for connecting the device to the nearest electrical outlet. In fact, in one of the offices of a county agent, we found one of these pig brooders erected in which a cotton-covered lamp cord was used as the flexible cord with ordinary brass sockets, all of which provided a horrible example for farmers in his area.

In the spring following the release of this publication, numerous fires were experienced by farmers who had constructed pig brooders in accordance with these recommendations. The fires were occasioned, in most instances, by the heat lamps of improper focal length which ignited combustible material placed beneath them. I believe this best illustrates the need for a closer tie between organizations such as NFPA and our many educational institutions and other organizations supplying information to the farmer.

THE drying techniques on the farm have now progressed to the point where it is apparent no one specific type of drier or dehydrator can be considered best for all purposes. It is true that a portable drier with a furnace and its controls and supply mounted upon a two or four wheel trailer will undoubtedly prove to be the most useful in that it can be moved from farm to farm or from building to building supplying heat for many varied drying operations. On the other hand, there is little question but that a drum type rotating drier is proving to be the most useful type of device for the dehydrating of chopped hay or alfalfa. Here again inasmuch as very few farms are sufficiently large to be able to afford exclusive use of such a unit, the device is best when of a portable nature allowing it to be used on several adjacent farms. On the other hand, farms which specialize in a given crop usually have individual problems which are not best met by driers of a portable nature.

IN addition to the hazards caused by heat producing devices, we also have that hazard occasioned by the electrical installation necessary to provide power for the fan motor and control equipment used in connection with the dehydrators and driers. Many of the farm buildings at or near where these units will be used were originally wired without any thought of providing power outlets. This often results in makeshift wiring which is a definite fire hazard to the property. On one installation in southern Minnesota it was noted that the installer or farmer had made use of a coil of No. 6 three conductor non-metallic sheathed cable laid over the ground some seventy-five feet from a nearby barn in which there was sufficient power to furnish energy for the dehydrator. This piece showed evidence of severe wear. Individual conductors were exposed in several places and it was

(*Please turn to page 29*)



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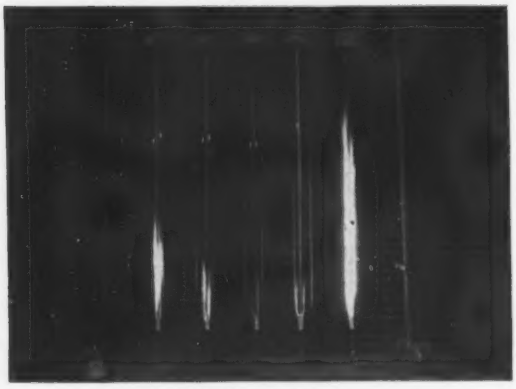

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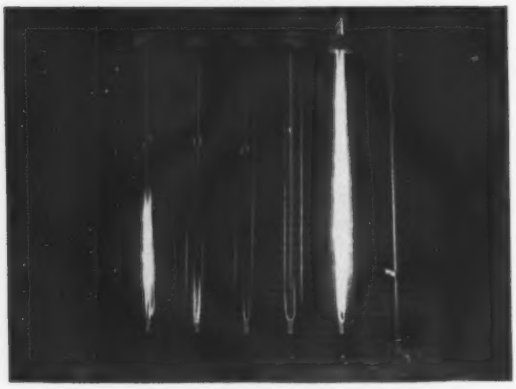

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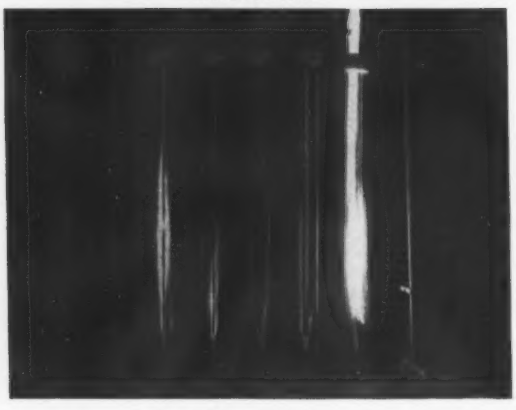

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Burning Characteristics o

From an address at the Fire Departm[illegible] str[illegible]
by A. J. Steiner of the Un[illegible]

FIRE protection men know that building construction is of importance in the reduction of fire losses. Buildings should be designed to contain fires within certain areas by proper location of fire walls of brick or concrete, with partitions having one, two, or four-hour fire-resistance rating. The openings should be protected by wired glass, steel windows, or tin-clad or sheet-metal fire doors. Signalling devices should report incipient fires and sprinkler systems and fire extinguishers check the fires until the fire department arrives.

The records show that these safeguards have been successful but in recent years some of these well-designed buildings have been remodeled and modernized. Perhaps the walls were treated to improve their appearance, or for acoustical correction, or to improve insulation properties. It may have been necessary to sub-divide large areas for various reasons. These changes often upset the fire safety which had been planned.

After fires in such remodeled buildings, it is not uncommon to hear someone say, "That was a bad fire, it spread fast — faster than fires have in the past," or "It was a flash-over fire." The cause for such performance seems to be a mystery, but eventually someone decides that a new type of finish, or lacquer, or paint, was the cause. In my humble opinion, such conclusions are expressed by persons who are not aware that many materials used in building remodeling sometimes spread fires more rapidly than would have been the case with materials with which we are familiar.

May I remind you of some recent rapidly-spreading fires where it was documented that they started in a location where certain kinds of materials were used in the remodeling or redecorating of existing, well constructed, or so-called fire-resistive structures. The Chicago LaSalle Hotel fire, in which many lives were lost, was apparently started in a room remodeled with building boards applied with concealed air spaces behind them. As you know, the fire spread very rapidly and the fire department was on the spot because the fire got away in the lobby area where the walls had wood paneling.

SOME of the paneling was brought to the Underwriters' Laboratories and in a test developed by them it was demonstrated that the rate of spread of fire on the panel surfaces was five and one-half times as fast as it would have been had the paneling been solid oak. Why? Because it was veneered paneling and not be-

One of the demonstrations used by Mr. Steiner is shown in pictorial sequence on these pages. Five samples of the same kind of wood, of the same size, were placed in glass tubes and subjected to the same size and intensity of fire for the same length of time. The different results obtained in burning occurred because of the condition of each sample. In each picture, reading from left to right, the samples of wood were as follows: (1) This piece was dry to a moisture content of 7 to 10 percent similar to what would be found in

cs of Building Materials

...s' Conference at Memphis, Tennessee,
... Underwriters' Laboratories.

cause it had too much varnish or lacquer finish. The test showed that when the paneling was heated, the veneer peeled and the thin, loose, paper-like sheets spread fire rapidly.

In this fire the rapid spread required extra oxygen which was obtained from the hallway on upper floors where the doors were not properly closed and these hallways served as air ducts supplying oxygen to the fire from the area where the oxygen was needed for life. There was nothing new or fantastic about the fire except that the arrangement of building materials was such as to produce the flash conditions which are now so common. Undoubtedly many of you appreciate that similar conditions exist in buildings with which you are familiar and, if the conditions are right, serious bad fires may occur.

Other similar examples are the Coconut Grove fire in Boston in which decorations were the cause for the catastrophe. At the St. Anthony Hospital, the acoustic tile placed on the walls and ceilings of the hallways played a part in the fire spread.

Industrial buildings of steel structures enclosed with corrugated steel coated with asphalt for many years have not been considered as a possible fire hazard, but in recent years a number of bad fires occurred by rapid spread of flames on such surfaces. There may be some excuse for past performance because no reliable method of evaluating fire spread on building materials has been developed.

ABOUT 25 or more years ago, when I became interested in fire problems, wood was considered a hazardous material from a fire viewpoint, but in recent years technical developments have created new products which burn many times faster than wood.

We at Underwriters' Laboratories realized the need for an answer to questions about the burning characteristics of new types of materials. We have received many times, samples of materials with the questions, "How will this burn?" or "Is this combustible?" or "How will this burn in comparison with wood?" These are difficult questions to answer unless there is proper test method to evaluate the burning characteristics.

The test method we have developed is very simple. It is based on the fact that wood will spread fire and cement concrete will not. In our test we have demonstrated that some species of wood will spread fire faster than others. The moisture content of wood is also

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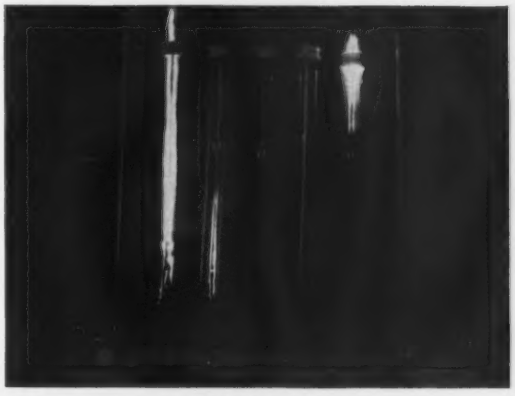

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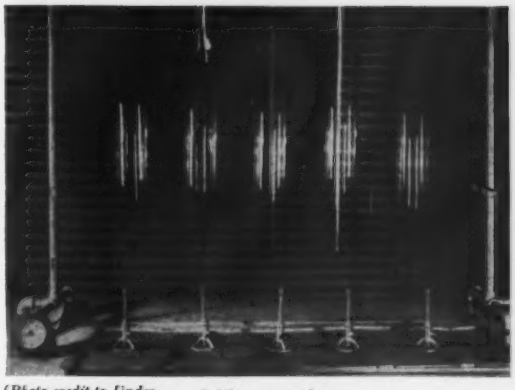

(*Photo credit to Underwriters' Laboratories, Inc.*) 340 seconds

a building during the heating season. (2) This piece had about the same amount of moisture that would be contained in wood in a building or an industrial establishment under high humidity conditions. (3) This piece has been treated with a chemical throughout its cross-section with the intent of keeping wood from spreading fire. (4) This piece was painted with a so-called "fire-proof" paint or coating. (5) This piece is the same as (1) except that it is laminated. Delamination occurred under heat.

NFPA Member Departments

Morrisville, Vermont, Volunteer Fire Department

WITH the motto "A job well done is worth doing" the Morrisville Volunteer Fire Department is entering its fiftieth year of organization. Recently the department dedicated a new fire station (shown above). Twenty-two call men serve as members and are headed by Chief H. H. Strong and Assistant Chiefs G. S. Burnham and D. E. Clevland.

Recently a new 750 gpm Mack pumper with a 400 gallon water tank was purchased. Other apparatus consists of a 500 gpm Maxim pumper and a Maxim ladder truck. The department is contemplating the purchase of a tank truck with a portable pump for rural fires. All equipment is purchased by the town through taxes but members of the department furnish their own uniforms and recreational facilities through funds raised by public entertainment.

Mount Vernon, Oregon, Fire Department

HEADED by Chief Jack McKenna and Assistant Chief Thomas Negus, the Mount Vernon Fire Department operates on a completely volunteer basis. Protected area includes a population of 500, two lumber mills and a gasoline storage plant.

Apparatus consists of a Seagrave 500 gpm pump mounted on a 1949 Chevrolet 1½-ton truck, and a portable pump of 70 gpm capacity. The fire station is 26 x 52 feet in size, of frame construction with aluminum covering.

FIRE PROTECTION ENGINEER

The Central Office of a national rubber manufacturer located in New York City requires the services of an experienced Fire Protection Engineer.

College graduate, preferably with chemical engineering degree, but will consider applicants with degrees in general engineering, mechanical engineering or chemistry. Special preference given to those who have taken graduate or undergraduate courses in fire protection engineering.

Minimum of five years' experience in industrial fire prevention work. Preference given to those who have held important fire protection positions in large manufacturing concerns or who have had training and experience with the Factory Mutual Engineering Division.

Must be willing to travel extensively throughout the United States.

Must be capable of dealing with top management people.

Give experience, education, age, references, personal history, salary received and salary expected. Please be complete and specific.

All inquiries will be considered promptly and kept confidential.

Box No. F151, NATIONAL FIRE PROTECTION ASSOCIATION
60 Batterymarch St., Boston 10, Mass.

Rosedale, Pennsylvania, Volunteer Fire Department

TWIN brothers Charles W. and Matthew M. Alcorn are the elected Co-Chiefs of the Rosedale Volunteer Fire Department. Assistant Chief R. G. Snively, Jr., President Clarence Sperling, and Secretary Carl W. Gernert are the other officers who lead this department of 32 active members. A women's auxiliary of 25 members is headed by Secretary Frances Wildow.

The department protects a residential district of 4000 population. Apparatus consists of a 1939 500 gpm American La France pumper, a 750 gpm Seagrave pumper, and a 1942 Pontiac Ambulance with a resuscitator and inhalator as equipment.

Funds are raised through township appropriation and by street fairs, card parties, and other activities sponsored by the members. Regular training drills are held once each month and members also attend the Annual Pennsylvania Fire School.

Emmett Township Fire Department Battle Creek, Michigan

SHOWN above is the station of the Emmett Township Fire Department. The truck at the left is a 1949 F-7 Ford which has a 500 gpm midship 2-stage pump, a 1,000 gallon booster tank, a Rockwood proportioner, and carries 40 gallons of liquid foam and 12 gallons of wetting agent. The truck at the right is a 1947 Dodge with a 500 gpm pump and a 450 gallon tank. Both trucks are equipped with three-way radio.

Chief Jack B. Seage heads this department of 22 active members. The department protects an area of 32 square miles consisting of a population of 9,000, heavy and light industrial establishments, and both residential and rural properties. Funds for the department are raised through taxes and members are paid $3 for each drill of 2 hour duration, $1.50 per call during the daytime and $2 for each night call.

The building also houses the Township Office (to the left of the fire station) and the Chief's residence on the second floor.

Fire Fighters "Steeplejack" City Hall Fire

SAN FRANCISCO fire fighters faced a dizzying situation with this February 16 fire inside the dome of the City Hall. A workman's torch had ignited the wooden stringers under copper sheeting inside the dome and the fire "mushroomed." As the accompanying pictures show, members of the department swarmed over the exterior of the dome to "open up" and using 2500 feet of 2¾ in. hose and 1000 feet of 1½ in. hose they managed to confine the damage to the dome, with little damage to the interior and its contents. The picture at the left shows the fire fighters' view from 308 feet from the ground.

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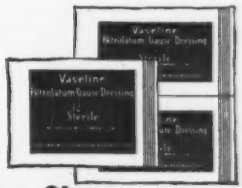
Cover damaged surface and area two inches beyond with two layers or more of petrolatum gauze dressing . . . then apply sterile dry bandage to keep clean and hold gently in place—using first-aid principles . . . have injury examined by a physician.



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In-Line Pumper Operation

(*Continued from page 9*)

alarm assignments with hydrants within 400 or 500 ft. of the place where the pumper is to operate. For longer supply lines pumper relays should be employed with a second pumper boosting the pressure at the hydrant.

Actually, in-line pumping or even relay pumping, is little different from any pumping operation using a "soft suction" connection from the hydrant. However, a soft suction is longer and usually is not of large enough diameter to supply the rated capacity of the pump with a single supply line. Where the limitations of the single 2½-in. supply line are realized, can be used with speed and success to supply one 2½-in. line or two 1½-in. lines.

NFPA Specifications for Motor Fire Apparatus call for a gated 2½-in. pumper inlet to permit in-line pumper operation without shutting down lines being supplied by the tank. These Specifications also call for at least a 2-in. connection between the tank and pump on the apparatus to permit adequate supply of two 1½-in. lines from the tank before the hydrant connection is made.

Upon arrival at a fire the 1½-in. lines are first supplied from the tank. The pump operator can keep his foot or leg against the 2½-in. supply line after it has been connected to the pump inlet. When he feels water reaching the pump he should close the tank valve and adjust to the new supply.

It is a very good practice to carry a gated siamese on the 2½-in. pumper intake because it is then possible to connect a second supply line to the pump without shutting down. With this second supply line, a supply of upward of 400 gpm can be brought from a hydrant capable of providing this flow. This makes possible use of two 1½-in. lines and a 2½-in. line on the fire, or even use of four 1½-in. lines.

RECENTLY PUBLISHED
National Fire Codes Volume V

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Extension Plaster Hook Used By Hartford Fire Department

THE Fire Department of Hartford, Connecticut, headed by Chief Henry G. Thomas, (chairman of the NFPA Committee on Fire Department Equipment), employs as a standard device a plaster hook with extendable handle. As most fire fighters know, ladder trucks carry a variety of lengths of plaster hooks for different ceiling heights. Pumper companies, however, generally carry only one length of plaster hook.

Hartford has solved this problem by equipping each pumper with a plaster hook that has an extension handle. The shortest length on the plaster hook is about 6 ft., and each extension adds a little better than 2 ft. bringing the total length of the plaster hook to approximately 11 ft. It has been suggested that where no long plaster hooks are available, the present plaster hooks on pumpers could be extended in this manner, by adding a 3 or 4 ft. extension handle.

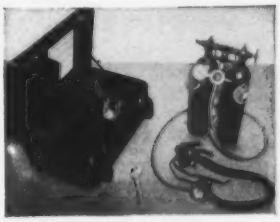
Protect Your Citizens with Better-Equipped Rescue Squads

Scott Demand Inhalator

THE new Scott *Demand* Inhalator provides efficient portable oxygen equipment for emergency use, *at low cost.* Offering "demand" flow of oxygen, plus constant flow if needed, the Scott *Demand* Inhalator can be used independently or as supplemental equipment in resuscitation, freeing resuscitators for use elsewhere.

The Scott *Demand* Inhalator is simply designed, easy to use. No adjustments of any kind are needed; department personnel does not require special training to use this new Scott product.

TYPE "A" Scott *Demand* Inhalator — portable, or for fixed installation in truck or ambulance (with or without cylinder)



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SIMPLE. The Scott *Demand* Inhalator is easy to use — requires no special training. No adjustments are necessary — just a quarter turn of the cylinder valve and the Inhalator is ready to restore shock, immersion and heart-ailment victims.

EFFICIENT. With the Scott Inhalator oxygen is provided in ample quantity as "demanded" by the victim, conserving precious oxygen supplies. Constant flow also available when needed, "at the touch of a button."

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Survey of Fire Department Instruction

An NFPA FIREMEN Staff Report

THE 1950 survey of fire department instruction in U. S. and Canadian cities of over 20,000 population brought replies from over 500 fire chiefs representing approximately half of the cities in the population group. Information received should be something of a challenge to firemen trainers on several scores.

Are we getting our information into the hands of the men who make training policy in the local departments and into the hands of the men who do the instructing? Several chiefs reported that they had no training program and no assigned instructors. It is possible that some of the chiefs who did not respond to the questionnaire were in the same class but did not care to record the fact. One man reported that they would initiate a program.

In 73 percent of the departments, training was a part-time responsibility of one or more officers and men. Some chiefs reported the need of a training officer, but indicated that manpower or funds did not permit such an assignment. One-fifth or 18.5 percent of the chiefs reported that they personally conducted the training for their department. In another 20 percent this responsibility was passed on to the deputy, assistant, and battalion chiefs. A common arrangement is to have each assistant or deputy chief responsible for the training of his own platoon. In another 24 percent, almost a quarter of the fire departments reporting, training was the responsibility of captains and lieutenants, usually each officer drilling his own unit, although in some instances one or more company grade officers were selected to drill all fire fighters, frequently at a training location.

IN about 1 percent of the departments the designated part-time instructor was a hoseman or fire fighter without rank. Such a man doubtless would be selected for special ability but might be at a disadvantage when drilling units commanded by officers. Even where company officers were assigned to do the instructing, it is not clear how the instruction is coordinated between various units and how the various phases of higher than basic instruction can be provided.

IN the departments where part-time instruction is used, 50 percent of the number have instruction by top ranking officers, either the chief or deputy or assistant chiefs. Let us see who does the instruction in the 27 percent of the fire departments having one or more men assigned to training full-time. In this instance we will be concerned only with the rank of the top full-time fireman trainer.

In several instances a captain or battalion chief is assigned full-time to training duties but training is the responsibility of a deputy chief who directs the training officer as well as fire fighting battalions. This may have some advantages because it coordinates the training effort with the work of the fire fighting divisions and gets the cooperation of all fire fighting officers as recognized participants in the training program. Fall River, Mass., and New Haven, Conn., come to mind as two outstanding examples of this system.

Where instruction is under the direction of a full-time fireman trainer, it is interesting that 38 percent or more carry the title of some grade of chief officer. About 16 percent are deputy or assistant chiefs and 22 percent are battalion or district chiefs. It might be argued that except where a deputy or assistant chief directs the full-time drillmaster on a part-time basis, the chief of the training division should rank above a battalion or district chief if his work involves directing such officers. Certainly, the 32 percent of the full-time drillmasters who have company officer rank or less could be at a disadvantage in carrying out a well-

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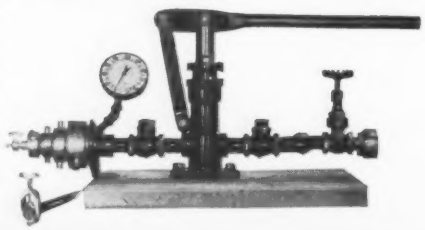

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rounded training program.

How, for example, could they participate as equals in a chief officers' conference in which fire fighting strategy and evolutions involving training are outlined. Of course, in a very small department a captain's rank may be of relatively greater importance and may prevent no difficulty in respect to chain of command. However, it might be well in the discussion of qualifications for drillmasters to consider the problem of rank. For example, where there are no battalion or divisions in the chain of command, a minimum rank of captain might be acceptable but where there are fire fighting divisions or battalions headed by chief officers, the training organization should at least have comparable rank with field commanders of the force it is expected to train.

Where the department is fortunate enough to have several men assigned to the training division, it is desirable to have at least one of chief officer rank and an assistant of company officer rank, with perhaps one or more lieutenants or firemen to serve as assistants.

The conclusion is that most fire departments have at least a basic training program and that training is a recognized responsibility of one or more officers. A number of the reports were very interesting and presented some excellent ideas and methods regarding fire department training organization and techniques.

Easily-Operated Geiger Counter

THE United States Atomic Energy Commission has released pictures of a simplified, inexpensive Geiger-Mueller counter. One model measures high-level radiation and another measures low-level radiation. It is not certain that fire departments will need to do monitoring for radio-activity, but if they do, this will be the sort of simple instrument used.

Friend of the Firefighter!

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The Original Mackinaw Striped Safety Coat

Reduces Accidents - Saves Lives

Several years ago, Midwestern developed the *original* striped safety coat. The highly visible stripes are moulded to and vulcanized as part of the material. Thousands of Midwestern Safety Coats are serving fire departments throughout the world. Service records prove these garments not only offer high safety visibility, but have the qualities required to withstand the rough usage required in your hazardous work of protecting life and property against fire.

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Largely through superior quality, design, fabric texture and advanced features, Midwestern is a leader in the field of firemen's clothing.

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Just hook up to your water supply and turn it on! Water flows through the Hydroblender and *automatically* mixes with the Pyrodyne capsules in proper ratio. Hydroblender holds two capsules, enough for 2,000 gallons and can be reloaded in a matter of seconds. Unused portion of capsule keeps for future use. It's foolproof!

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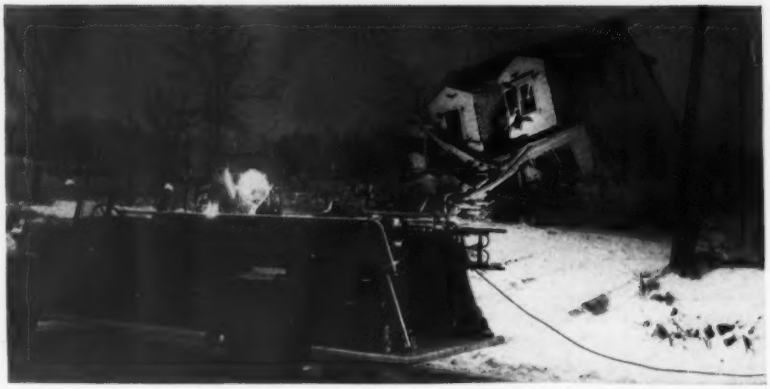


This is how the William Bates home looked after the explosion of a passing dynamite truck. Her husband was killed and Mrs. Bates, also severely injured, was found standing in the yard, holding her infant child in her arms. At least eight other persons were injured by the explosion. Concussion was felt in Martinsburg, 15 miles away.

Tire Chain, Gasoline Tank, and Dynamite

From a report submitted to the NFPA Fire Record Department
by Chief John L. Vickers of the Citizen Fire Company, Incorporated
Charles Town, West Virginia

AT 4:40 A.M. on February 1 a tractor-trailer vehicle hauling fifteen tons of dynamite was traveling on U.S. Route 340 near Halltown, West Virginia. According to driver Edward Shade, the cross link on a tire chain snapped and struck the gas tank of the truck and a fire resulted. Slade stopped the truck, shouted a warning to another truck that had been following him, then ran to warn people living nearby.

William Bates, owner of the nearest home, was awakened and immediately put in a telephone call to the Citizens Fire Company, Incorporated, in nearby Charles Town. Icy roads slowed the progress of the fire apparatus and it took ten minutes to travel the four miles to the scene. By this time the involved truck had exploded, killing Bates and critically injuring Mrs. Bates and Mrs. Estelle Cobb whose home was also nearby.

A crater 15 feet deep and 30 feet in diameter was blasted in the road. Both of the homes, which were within 500 feet of the explosion were demolished. Window panes and doors of buildings within a half-mile of the area were severely damaged. A large tree about 50 feet away was shattered. Telephone and power lines were severed, shutting off these services to the entire Bolivar-Harpers Ferry section. The second truck, which was traveling about 100 yards behind Slade's and carried an equal amount of dynamite, only received a broken windshield.

The accident occurred on a quarter-mile level stretch of highway that ran in a small ravine. If the truck had proceeded one-half mile further before the explosion, the scene would have been in the center of Halltown.

The duration of the fire before the explosion is not known, but apparently it reached some intensity since members of the fire department and other people in the vicinity saw the light of intense flames before the explosion occurred.

Injured persons were taken immediately to the hospital by autos and an ambulance was called for Bates.

This shows the interior of the home of Mrs. Cobb. William Bates, who telephoned the alarm from here, was found lying just inside the doorway facing the chair, while Mrs. Cobb, injured, was found sitting on the door step.

Fire Schools in 1951

Indiana: The Seventh Annual Arson Investigators' Seminar will be held at Purdue University, Lafayette, April 23–27.

Iowa: The Twenty-seventh Annual Iowa Fire School will be held at Iowa State College, May 15–18

Kentucky: The Kentucky Fire School will be held in Lexington, June 5–7.

Minnesota: The Northwest Fire School will be held at Williams Arena, University of Minnesota, April 30-May 3, inclusive.

Montana: The Twelfth Annual Montana State Fire School will be held at Polson, September 5–8. (Tentative dates.)

New Mexico: The 1951 Fire School and Convention will be held in Hobbs, May 14–16.

Pennsylvania: The Thirteenth Annual Pennsylvania Fire School will be held at Lewiston, August 6–10.

West Virginia: The Twenty-first West Virginia Fire School will be held in Morgantown, July 23–27.

•

Great Lakes IAFC Conference

THE Great Lakes Division of the International Association of Fire Chiefs will hold a two-day conference in South Bend, Indiana, on April 19 and 20. The Conference will be confined to Civil Defense Fire Protection and Fire Department Activities. Headquarters will be at the Oliver Hotel. Other hotels in the city are the Huffman and the La Salle. Persons interested in this conference should write to Chief Alex Andrzejewski of South Bend or to the hotels for reservations.

•

Patrol Encourages Fire Prevention

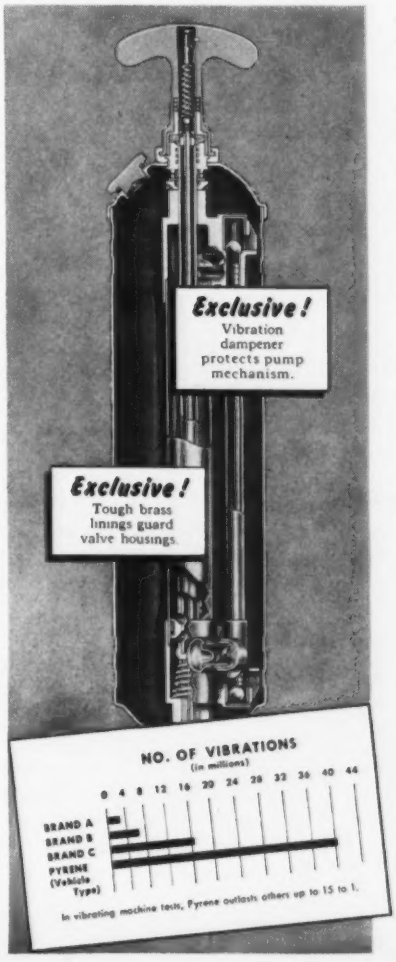
THE Nyack Fire Patrol (a volunteer salvage corps) has arranged to give a $10 prize for the best school essay on fire prevention according to Captain William Paul Babcock, long-time NFPA member. The prize is being given in honor of Captain Albert S. Johnston, "godfather" of the Nyack Fire Patrol.

Special construction gives PYRENE Vehicle Type Extinguishers

AT LEAST TWICE THE SERVICE LIFE OF ORDINARY VAPORIZING LIQUID EXTINGUISHERS

Constant vibration cuts short the life of most vaporizing liquid extinguishers installed on trucks and other vehicles.

Not so with Pyrene* 1 qt. and 1½ qt. Vehicle Type Extinguishers. When subjected to vibration, they'll give at least twice the life of ordinary extinguishers.


Exclusive!
Vibration dampener protects pump mechanism.
Exclusive!
Tough brass linings guard valve housings.
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PYRENE (Vehicle Type)
In vibrating machine tests, Pyrene outlasts others up to 15 to 1.

A special vibration dampener holds the Pyrene pump mechanism firmly in place, protecting it against both vertical and horizontal vibration. And tough brass linings guard the valve housings in every spot where wear would occur. *No other extinguisher offers these vital added construction safeguards.*

In competitive vibrating-machine tests (the most rigorous of such tests known) a Pyrene Vehicle Type Extinguisher outlasted three other major brands by more than 2 to 1 . . . the ratio going as high as 15 to 1. (Chart shows details.) And there is not one single known instance of the Pyrene heavy-duty mechanism wearing out in actual operation.

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Write *today* for more details — and for free diagram of simply made, low-cost proportioner you can make yourself. Dealers, nationwide.

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Maryland Fire Companies Merit Insurance Rate Reductions

THE Maryland State Firemen's Association reports that 106 volunteer fire companies in the state have been approved as meeting the standards for extending insurance rate reductions to areas which they protect.

This is the result of work by the State Firemen's Association through its Fire Rate Committee to gain recognition of the value of volunteer fire companies serving areas not protected by fire hydrant service, but in which an appreciable degree of fire protection is being provided.

However, the Committee further reports that the applications of 78 fire companies were rejected and that most of the rejections were due to inadequate training of volunteer firemen rather than matters of equipment. This fact should encourage other Maryland fire companies to take the training freely offered through the Fire Service Extension Division of the College of Engineering at the University of Maryland.

The Committee reports that the next deadline for approval and recognition of fire companies for insurance rating purposes is July 15th.

●

"Fire Inspection Practices" Course in Toronto

A 5-day course in "Fire Inspection Practices" was conducted by the Ontario Fire Marshal's Office at Ryerson Institute, Toronto, on March 12–16. This was the first of a planned series to be held at five or six-week intervals during the coming spring.

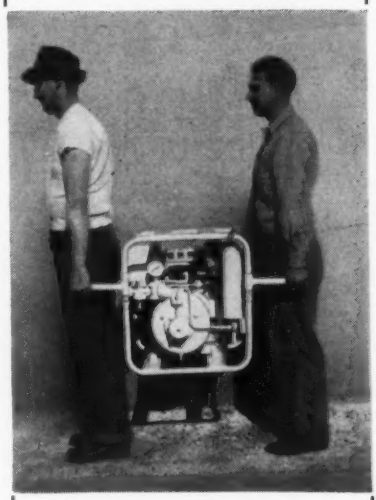
Lectures for the course are based on the new "NFPA Inspection Manual." Each student is given a free copy of this publication by the Ontario Office of the Fire Marshal.

Due to classroom limitations the attendance is limited to 24 students per course. Admissions are made only on the basis of formal registration in advance.

In addition to lectures, one and a half days of the course are devoted to field inspections of various types of buildings under the guidance of the Toronto Fire Prevention Bureau, and the Ontario theatre and hotel inspection branches of the Fire Marshal's office.

Hale Type FZZ

• Quick-Starting • Portable
• Compact • Powerful
• Versatile



Above — Frame-mounted FZZ can be easily carried by two men. It is also available mounted on rubber cushioned steel channels, or on two truck-type wheels.

Fire Companies frequently write us telling of the many practical ways they use their portable Hale type FZZ, such as the following:

- For fighting field or forest fires from moving trucks.
- For "wetting down" and standby use, thus releasing major equipment.
- For pumping out flooded cellars and elevator shafts after fire, flood or other emergency.
- For relaying water to pump or booster tank from sources inaccessible to major Fire Pumpers.
- For factory protection in fighting fires before major equipment arrives.
- For fighting oil or other type fires requiring foam. (Built-in foam proportioner available when specified.)

The FZZ will supply from draft, 60 GPM at 90 lbs. pump pressure; and 150 GPM at 30 lbs. Can supply two capable streams through 1½-in. lines, using nozzle tips up to ½ in. **Note:** Discharge Adapter can be supplied for use with 2½-in. fire hose.

Write for FZZ folder today.
Ask for demonstration.

HALE FIRE PUMP COMPANY
CONSHOHOCKEN, PA.

Fire Pumps in All Standard Capacities

Burning Characteristics

(*Continued from page 17*)

important. Veneered lumber may spread fire five times or more faster than oak as was the case of the paneling in the LaSalle Hotel fire previously referred to. In order to compare the burning characteristics of different materials, it is necessary to test them under identical conditions. I want to remind you that nothing will burn if it is not heated to ignition temperature. Moisture, rate of air travel and the size of intensity of the exposing fire in relation to the material to be ignited are also important.

IN our tests, all materials are conditioned to a moisture content stability under standardized conditions of approximately 70° Fahrenheit and 35 per cent relative humidity. The test fire conditions, that is, air travel and moisture content of the air and the size and intensity of the fire are regulated so as to permit wood to burn.

A good example for the necessity of control to attain ignition can be illustrated by the difficulties sometimes experienced in obtaining ignition in your automobile. The tank may be full of gasoline, the battery in first-class shape, the spark plugs producing a good spark, there may be sufficient fuel, but the engine will not start unless the carburetor is properly adjusted. You cannot get ignition in your engine unless all conditions are right within reasonable limits. The same thing holds good for ignition of building materials.

My theory is that more fires, bad fires, occur in buildings during the heating season because all combustible materials have been dried and the moisture in the air is less and, therefore, materials will ignite easier and burn faster. The conditions are more favorable to ignition.

As a final word I urge that new materials created for use in building construction be classified as to their burning characteristics to assist those authorized, to regulate, to reduce, or even eliminate such fire catastrophies as we are now experiencing.

Ward LaFrance Fire Truck
equipped with the New Hannay Hose Reel.

It's the New

HANNAY HOSE REEL

WATER-RESISTANT
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EXPLOSION-PROOF

New models for fire trucks and airport crash trucks are especially designed with extra strong construction to withstand high pressures and the motor is protected against fog, foam, water and fumes. Developed to overcome the danger factors previously associated with electrical rewinds, the Hannay Reel has been PROVEN SAFE and efficient in exacting factory and field service tests. Explosion-proof, heavy duty motor with permanently lubricated bearings is Underwriters Approved Class 1, Group D, and is an integral part of the reel; needs no attention.

- **Can be connected through conduit, for sealed, safe installation.**
- **Sealed push button control; "push" to start; "release" to stop.**
- **Quiet, positive sprocket and chain drive; no gears to shift; no clutch to engage.**
- **Safe rewind speed, always under control.**
- **Smartly designed, compact, durable, dependable.**
- **Simplicity of construction and operation reduces maintenance costs to a minimum.**

ASK YOUR SUPPLIER
or write direct for
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Brush Fire N

BRUSH and field fires are a very common problem in many parts of the United States during dry seasons in Spring, Fall and Summer. In many communities such fires comprise more than half of the actual fires fought by the fire department in the course of a year. Such fires are not unimportant economically because the cost of suppression is often very high, particularly where numerous volunteer firemen are called from gainful employment. Often homes and other buildings are endangered or even destroyed.

All too often the average fire company is poorly equipped to handle these fires. This is illustrated by a typical brush fire recently observed near an important highway. An engine company tried to put out this fire with brooms without success (apparently no back pack extinguishers were available). The fire had then spread to the point where a booster line was used until the small tank on the pumper went dry. Then a 2½-in. line was laid across the main highway completely stopping heavy interstate traffic. Motorists were conscripted to handle the heavy charged line through the brush. Eventually the fire was extinguished and traffic was allowed to proceed on its way. The loss of time to perhaps a thousand people for upwards of half an hour will not appear on the loss records, but the delay to trucking is certainly a real economic loss in these days of "economic mobilization." Why is it that so few fire departments or even police departments carry hose bridges to permit traffic to continue? Does the world have to stop because a few men are needed to fight a brush fire?

For years FIREMEN has urged the importance of having a woods fire truck, brush fire truck or "bunny wagon" assigned to fire stations in suburban residential areas. This saves needless wear and tear on heavy duty apparatus.

In 1934 the NFPA officially adopted standards for such apparatus. These are published in the National Fire Codes, Volume IV, under the title "Community Forest Fire Fighting Equipment," and provide for two sizes of units. One

is a light-weight vehicle with 150 gallon tank and 30 gpm pump. The other has a 300 gallon tank and 100 gpm pump. The trucks carry 300 to 500 ft. of hard rubber hose and upward of 1500 ft. of such other discharge hose of 1-in. to 1½-in. diameter as best meets local conditions. The trucks also carry brush fire tools including pump tank extinguishers.

The NFPA Forest Committee is at present considering a revision of these standards. With the ability of the smaller commercial trucks to give better performance it is likely that the next edition will suggest increasing both tank and pumping capacities.

●

Dehydrators and Driers on Our Farms

(*Continued from page 15*)

only a question of time before trouble would develop.

Inadequate feeders to farm buildings will bring about low voltage conditions which are likely to cause use of improper overcurrent protective devices and serious overload conditions to the motors. Probably this can be handled best by the preparation of a wiring table which will show the sizes of conductor necessary from the main service equipment to the power outlet which must be installed for the operation of these units.

Several of the farm publications are already cautioning farmers concerning the installation of various types of crop processing equipment. I believe it most necessary to do everything possible that will aid in correcting present conditions. It is a certainty today that as the price of farm products drop it is going to be more essential to make investments which pay dividends. We can be sure the crop drier is one of these dividend paying devices and farmers will make increasing use of the dehydrator and drier each year.

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EVERY SPECIAL FEATURE FIREFIGHTERS NEED!

You won't be fighting a fire today and a cold tomorrow if you're equipped with *U. S. Royal* Firefighter Boots. Made specially for rugged use, they resist water, acids or chemicals. And those tough cleats may prevent a fatal slip . . . even on icy pavements.

U. S. Royal Firefighter Boots

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- Wide skirted top pulls on or off, FAST
- Rubber yank-hooks
- Boot lining and insole of soft, warm felt
- Super-cushiony insoles
- Storm King or Short Boot lengths
- White cleated outsole for visibility
- Reinforced construction resists snagging

U. S. Royal Firefighter Coats

100% waterproof coats of sturdy black rubber with warm, maroon napped lining. Roomy, 2-piece body, raglan shoulders; fly-front with instant snap and dee fasteners; roomy outside patch pockets. No stitching in main body; seams cemented, outside gum-strapped. Fully vulcanized after making.

US ROYAL FOOTWEAR

UNITED STATES RUBBER COMPANY
Serving Through Science
ROCKEFELLER CENTER, NEW YORK

The "NEW YORKER"
(No. 5A--Regulation)
IN LEATHER

CAIRNS
HELMETS

The "CLIFTON"
(No. 900--Regulation)
IN PLASTIC

CAIRNS & BRO., Inc. - Allwood, Clifton, N. J.
Write for Catalog 330

CAN PAY for ITSELF
IN 6 MONTHS
By eliminating Dry Batteries

5" TRUE parabolic, silver plated reflector; 25,000 c.p. beam; ⅓ mile range; sturdy metal case; corrosion proof terminals

Only 72 ounces
• Will not spill in ANY position

Battery change in 10 seconds without returning to factory

NON-SPILLABLE RECHARGEABLE
Type G-23
MASTER-LIGHT
for FIREMEN
POLICE and WATCHMEN
Write for new Emergency Lighting Bulletin
CARPENTER LIGHTS
168 MASTER-LIGHT BLDG.
BOSTON - 45 -
SOMERVILLE, MASS.

FOLDING CHAIRS
IN STEEL OR WOOD

Folding Banquet Tables
SHIPPED DIRECT FROM THE FACTORY
Write for complete catalog
J. P. Redington & Co.
Dept. 97, Scranton 2, Pa.

Membership Report

NFPA Welcomes:

The following fire chiefs and fire departments. Total NFPA Fire Department Membership is now 1,479 organizations and 21,057 men.

California: Tennyson Fire Club, Hayward.
Orland Volunteer Fire Department, Orland.
San Bruno Fire Department, San Bruno.

Connecticut: Mortlake Volunteer Fire Department, Brooklyn.

Georgia: Marietta Fire Department, Marietta.

Illinois: Brocton Community Fire Protection District, Brocton.
West Suburban Fire Protection District, Rockford.

Kansas: City of Leoti Fire Department, Leoti

Michigan: Clifford Fire Department, Clifford-City of Greenville Fire Department, Greenville.
White Lake Township Fire Department, Oakland.
Suttons Bay Fire Department, Suttons Bay.

New Jersey: Haledon Fire Company, Haledon.
Chief Harry V. Zigenfus, Irvington Wharton Fire Department, Wharton.

New York: Bowmansville Volunteer Fire Association, Bowmansville.
Alert H & L & Engine Company No. 1, Congers.
Weble Fire District No. 1, Old Forge.

Ohio: McArthur Fire Department, McArthur.

Oregon: Chief J. H. Tillman, Athena Rural Fire Protection District No. 10, Portland.

Pennsylvania: Richaldn Township Volunteer Fire Department, Gibsonia.
Good Will Hose Company No. 3, Flemington.

Tennessee: Alcoa Fire Department, Alcoa.

Virginia: Clarksville Volunteer Fire Department, Clarksville.
Williamsburg Fire Department, Williamsburg.

Washington: Kittitas County Fire Protection District No. 1, Thorp.
Walla Walla Fire Department, Walla Walla.
Wilkeson Fire Department, Wilkeson.

West Virginia: Chief Claude Stowers, Williamson.

Canada

British Columbia: Parksville Volunteer Fire Department, Parksville.

Manitoba: Steinbach Volunteer Fire Brigade, Steinbach.

NFPA Fire Department Membership costs $12.50. For fire departments and fire chiefs, this membership includes six subscriptions to FIREMEN, plus single subscriptions to FIRE NEWS and the QUARTERLY. Additional subscriptions to FIREMEN are available only to NFPA members at the cost of $1.25 each.

IS THIS YOUR CITY?
FOR
FIRE
OPEN
THEN
PULL DOWN
HOOK
32
FIRE
TOO FEW - TOO LATE!
Nearly 400,000 fires and two-thirds of the life loss by fire occur annually in residences. Delayed alarms and tragic consequences are frequently caused by inadequate box distribution in residential districts.

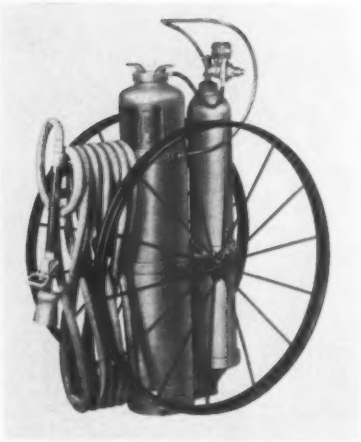
TRADE MARK
GAMEWELL
REG U.S. PAT. OFF.

The GAMEWELL COMPANY

NEWTON UPPER FALLS 64, MASSACHUSETTS

IN CANADA: NORTHERN ELECTRIC COMPANY, LTD., BELLEVILLE, ONTARIO

What's New in Fire Equipment?



Kidde Introduces Wheeled Dry Extinguisher

WALTER KIDDE & COMPANY, Incorporated, has announced a wheeled dry extinguisher with 150-pound capacity for combating Class B and Class C fires. The new extinguisher is mounted on two wheels and balanced to permit one-man mobility. A large cylinder contains 150 pounds of dry chemical and a smaller cylinder holds nitrogen under pressure of approximately 200 pounds per square inch.

A 50-foot heavy duty hose has a discharge nozzle with a stirrup-type control lever for "Straight" or "Fan" discharge. All materials used are corrosion-resistant and the dry chemical mixture is formulated to prevent moisture absorption and clogging.

New Discharge Gate Valve by Waterous

A NEW quick-opening ball-type discharge gate valve has been announced for new fire apparatus or a replacement for all apparatus manufacturers who feature Waterous fire pumps. The valve seat is synthetic, oil-resistant rubber which is claimed to lessen the danger of sand or grit destroying the seal. Pressure of the water is utilized to keep the seal tight against the valve ball but with pressure controlled to avoid excessive friction. The new valve is said to operate easily at pressures of 500 psi. For additional information, write to Waterous Company, 80 Fillmore Avenue, E., St. Paul, Minn.

Low Cost Amplifier for Fire Trucks

THE Newcomb Audio Products Company, 6824 Lexington St., Hollywood, Calif., announces a recently developed low cost 10 watt amplifier to provide emergency sound for fire trucks. Claimed to be particularly rugged and dependable, this 9¾ pound battery-powered public address amplifier, Model E-10M, operates on 6 volts D.C. or 117 volts, 60 cycles A.C. power.

Shop of Siebert Has New Line of Ambulances

A NEW line of Ford industrial and municipal ambulances for 1951 is announced by Shop of Siebert, Toledo. Pictured is the utility model accommodating one person in a cot and one suspended patient. Other models are the roomy, stock ambulance for four reclining patients and the Siebert Leeds Aristocrat, sound conditioned and heat and cold insulated. Send for free illustrated booklet to Shop of Siebert, 612 Southard Avenue, Toledo 2, Ohio.

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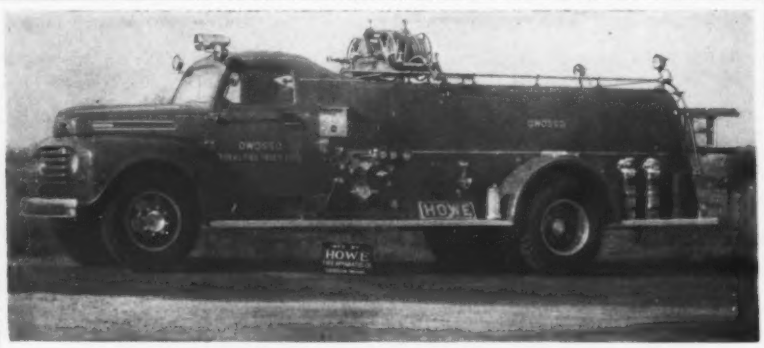


HOWE Fire Truck Equipment Meeting Every Service Since 1872
Centrifugal, Rotary, and Piston Pumps supplied
HOWE FIRE APPARATUS COMPANY, 1406 West 22nd Street, Anderson, Indiana

STRENGTHEN

It's good fire protection practice to be prepared for *maximum* emergencies. That's why more and stronger fire-defense weapons are necessary *now* — *before* the severe service that may come.

Without delay, *your* apparatus and equipment should be measured against the hazards you may face. Have your pumpers the power and stamina to deliver full capacity for long periods of time? Have you plenty of hose-carrying and booster or tanker capacity? Modern ladder trucks — particularly aerial, for ladder-pipe work on upper stories?

Now is the time to make sure of your strength. You'll find your Mack representative ready and able to help. For he can show you the latest in fire-fighting engineering — modern yet proved features in use in leading departments. And he can show you how only first-line apparatus like Macks are *big* enough, *strong* enough, *powerful* enough to depend on for your fire-front defenses.

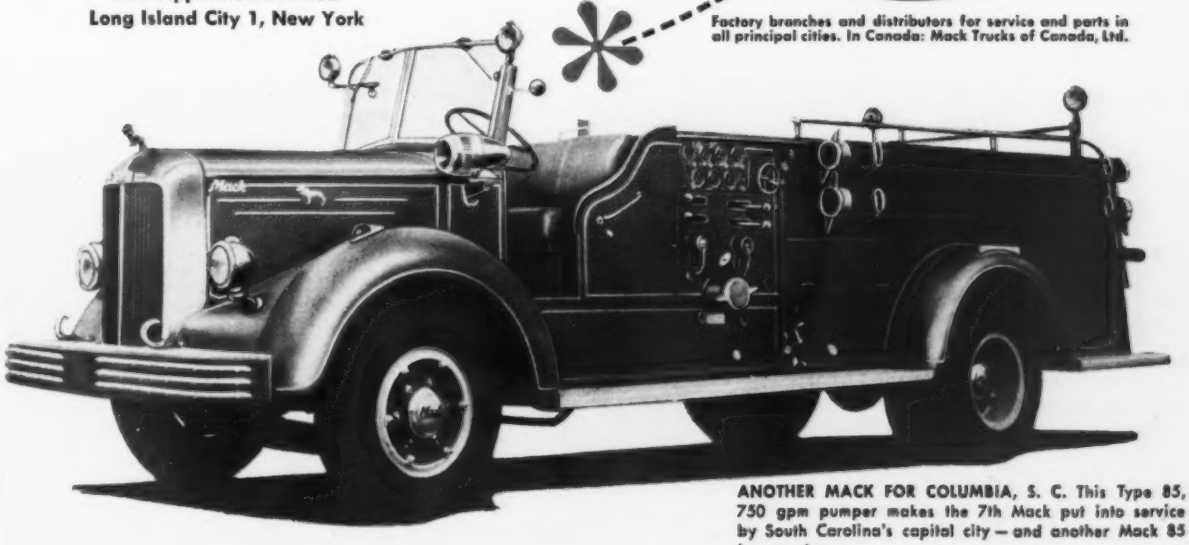
YOUR FIRE DEFENSES NOW!

Modernize with

Mack
FIRE APPARATUS

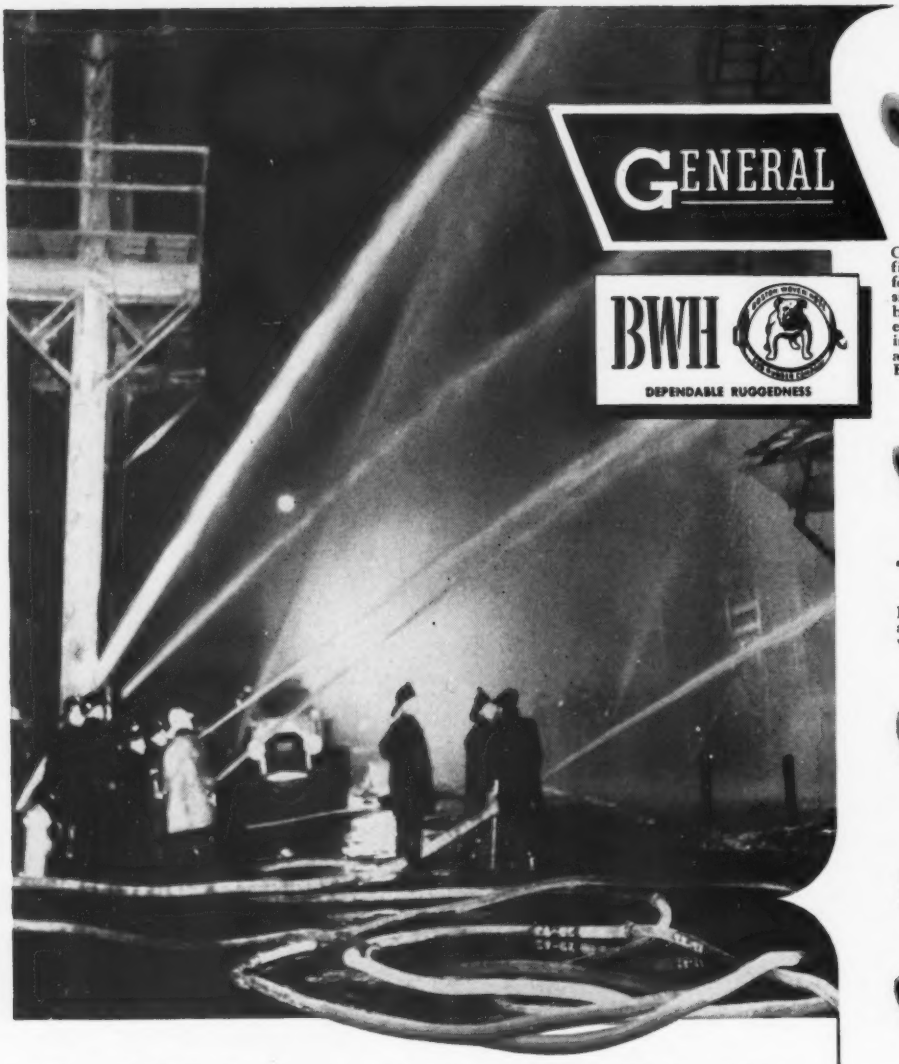
MACK MANUFACTURING CORPORATION
Fire Apparatus Division
Long Island City 1, New York

Factory branches and distributors for service and parts in all principal cities. In Canada: Mack Trucks of Canada, Ltd.



ANOTHER MACK FOR COLUMBIA, S. C. This Type 85, 750 gpm pumper makes the 7th Mack put into service by South Carolina's capital city — and another Mack 85 is on order.

TRIPLE COMBINATION PUMPERS — 500 TO 1500 GALLONS . . . SQUAD AND HOSE CARS . . . AERIAL, CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS



The BEST Equipment is the ONLY Protection Against the WORST Blaze

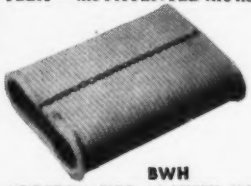
You can't put an end to fires, but you can go a long way toward preventing a tragedy. You can do this by keeping an ample supply of fire-fighting equipment . . . and keeping it in tip-top shape. Records show that the worst blazes have been successfully beaten by the best equipment and skilled handling, while equipment-failure underlies most tragedies.

Hose-failure is one of the big equipment worries that you can be free of always when your department is equipped with BWH Fire Hose. It's light in weight and easy to handle on ground or ladder. Flat cured to fold fast and snug in truck bed. And we'll let its reputation speak for BWH year in, year out toughness and pressure resistance . . . a real bearcat for punishment!

Look for the "General" trademark in the classified section of your phone book. Use this organization's specialized experience to help you in your equipment problems . . . let our Fire Equipment experts tell you more about the BWH 73-year leadership in the fire hose field.

GENERAL
"INNER FLEX" HOSE
Double Jacket Construction

General INNER FLEX is the only fire hose with the genuine, smooth-folding inner jacket, especially designed to provide complete pliability. The specially woven folded edges prevent squeezing and pinching and its smooth rubber lining affords longer lasting life. INNER FLEX — the PATENTED fire hose.



BWH
"BOSTON FIRE JACKET" HOSE
Double Jacket

Heavier, stronger fibers, perfect adhesion, smooth, friction-resistant water-way. Rates tops in every test!

BWH
"PARAMOUNT" HOSE
Double Jacket

Designed for easy handling and long service on tough jobs. Ages well, withstands high pressures.

BWH
"MILO" HOSE
Single Jacket

For long, trouble-free performance in communities where a light service hose is adequate.

BWH
"UNDERWRITERS" HOSE
Single or Double Jacket

Made in strict accordance with the National Board of Fire Underwriters' specifications. Labeled or unlabeled.

Distributors of Famous

BOSTON WOVEN HOSE & RUBBER CO.

Municipal Fire Hose

THE GENERAL DETROIT CORP.

DETROIT 7, MICHIGAN

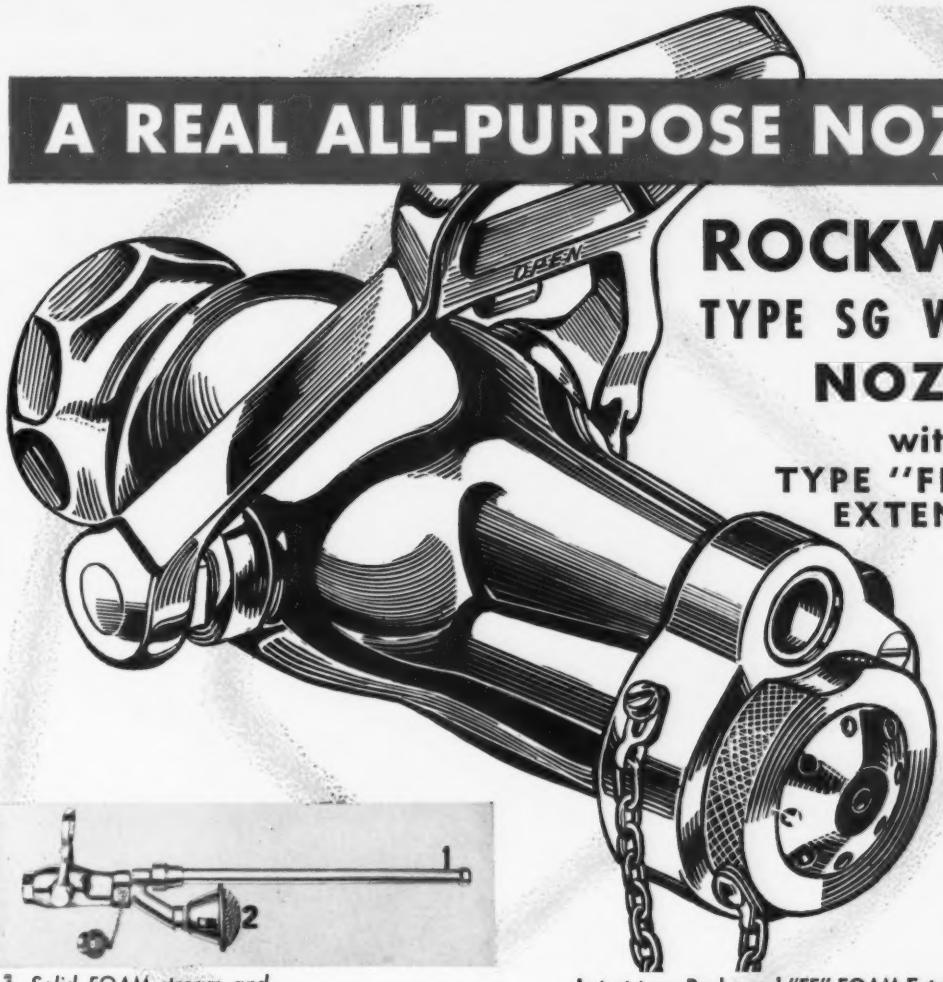
NEW YORK • PHILADELPHIA • ATLANTA • CHICAGO • DALLAS

Subsidiary:

THE GENERAL PACIFIC CORP.

LOS ANGELES • SAN FRANCISCO • SEATTLE

A REAL ALL-PURPOSE NOZZLE!



ROCKWOOD
TYPE SG WaterFOG NOZZLE
with TYPE "FF" FOAM EXTENSION

1 *Solid FOAM stream and*
2 *FogFOAM from "FF" FOAM extension inserted in type SG WaterFOG Nozzle.*

3 *High Velocity WaterFOG.*

4 *Straight water stream.*

5 *Low Velocity WaterFOG from extension applicator.*

Latest type Rockwood "FF" FOAM Extension unit makes possible *5 different kinds of discharge* from only one type SG WaterFOG Nozzle — (1) solid FOAM stream (2) FogFOAM (3) high velocity WaterFOG (4) solid water stream (5) low velocity WaterFOG.

This new type "FF" FOAM extension combined with our type SG WaterFOG Nozzle will handle any type of fire in ordinary combustibles, flammable liquids or materials that can be extinguished with water alone or water mixed with FOAM Liquid. These "FF" extension units are available for use with Rockwood Nozzles on ¾", 1" or 1½" fire hose lines.

Rockwood FOAM Liquid can be automatically mixed with water supplied to the new "FF" extension by means of the Rockwood hose line FOAM eductor (with SG-60 Nozzle), or the latest type Rockwood FOAM proportioning systems built into fire trucks (with type SG-47, SG-48, SG-60 Nozzles). Write for literature and prices.

Note: Efficient use of the "FF" FOAM extension can be obtained only when used with Rockwood Nozzles.

ROCKWOOD

Portable Fire Protection Division

ROCKWOOD SPRINKLER CO.

88 HARLOW STREET WORCESTER 5, MASS.

Rockwood WaterFOG Nozzles are approved by Underwriters' Laboratories and Factory Mutual Laboratories.

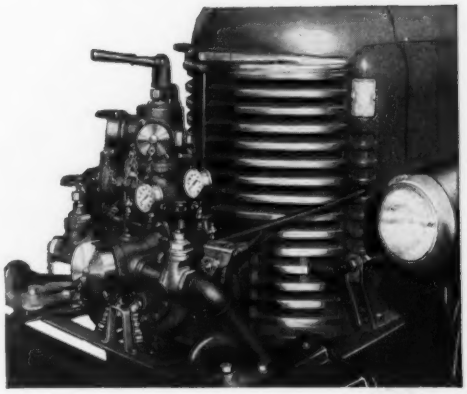
BEAR FACTS!

● Come spring or fall you'll be answering many calls to fight running grass and brush fires. You can save valuable time—and land and property—by fighting fires while your truck is on the move.

For a really effective job, insist on a UA-50 Barton American front-mounted fire pump—pumps with truck in motion. Even a driver can fight a large grass fire alone!

Whether the truck is in creeper low or moving rapidly, the UA-50 delivers effective high pressure fog or straight streams.

The Model UA-50 also has many other additional features that are well worth knowing about. Before you decide on your fire pump, call the Barton-American representative in your area.



AMERICAN-MARSH PUMPS

Ask for Bulletin 8330 which fully describes all the outstanding features of the UA-50 including its frost-proof construction, high pressure performance using Barton Super-Fog guns, and its specifications.

IN CANADA: C. E. HICKEY & SONS, LTD., HAMILTON, ONTARIO

AMERICAN-MARSH PUMPS, INC., BATTLE CREEK, MICHIGAN, U. S. A.